

THE AUSTRALIAN HERPETOLOGICAL SOCIETY JOURNAL



AUSTRALIAN HERPETOLOGICAL SOCIETY

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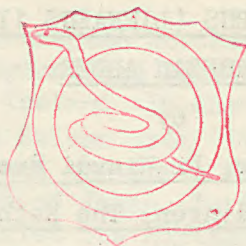
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Meetings are held on the 3rd Thursday night of each month at 8 p.m. 1st Floor, Parramatta Town Hall.

Authors of articles contained in the journal are responsible for the opinions expressed and for the accuracy of the facts in their contributions.

COVER - Boyds Forest Dragon (*Gonocephalus boydii*)

HERPETOFAUNAAUGUST, 1971VOL 3 NO. 3

The committee of the Australian Herpetological Society wishes to advise that Mr Eric Worrell M.B.E., has accepted the position of Patron of the Society.

Eric Worrell needs no introduction to members the Australian Reptile Park is well known and his book "Reptiles of Australia" is the standard reference work, in addition his other publications are widely read by those interested in wild life. He has been associated with the Society for many years and the Australian Reptile Park continues to be a frequent stopping place for members

We are proud that Mr Worrell, one of the leaders of Herpetology in Australia, has undertaken the Patronage of the Society

G. Swan,
President.

Lapel Badges

Supplies of the Society's lapel badge are now available to financial members. Cost \$1.00 per badge.

VIPERA BERUS (LINNAEUS 1758)

EUROPEAN ADDER

by

A.J. Zwinenberg, Dr Wiardi Beckmansingel 337,

Vlaardingen, The Netherlands

Part 1

INTRODUCTION.

According to Mertens and Wermuth (1960) the European herpetofauna consists of a total of 150 different kinds of animals. It is made up of 43 species of amphibians (19 Caudata, 24 Salientia) and 107 species of reptiles (11 Testudines, 63 Sauria, 33 Serpentes).

In comparison with the Australian herpetofauna, which, according to the latest estimates, consists of more than 550 varieties, Europe is not as well off. In addition the existence of a number of the European species is doubtful, and a further number are rare. Of these 150 kinds of reptiles and amphibians 21 live within the borders of The Netherlands (5 Caudata, 9 Salientia, 4 Sauria, 3 Serpentes).

Although Europe has only ever known about ten or so venomous snakes these have always been quite actively attacked with the result that some species have been greatly reduced in number.

This is especially true of the European Adder. The population has been drastically reduced in the last decade and it has become very rare in some areas. Only in distant, less easily accessible areas of its unusually large range is it still reasonably common. The adder is feared and hated by many and the number of misconceptions in circulation about it are numerous, yet it is in essence a very useful animal as it keeps a check on mice and other small pests.

RANGE.

The adder ranges, in four geographical races (see table) throughout almost the whole of the northern paleoartic fauna area. In Western Europe it is found

from the South of France and Northern Spain to Iceland, reaching inside the polar circle. England and Scotland also belong to its territory, but is not found in Ireland. In Eastern Europe its southern border ranges through the Northern Balkan area. It is found practically throughout the whole of Russia and temperate Siberia, as well as on the island of Sachalin to the North of Japan. In Asia the river Amur forms its Southern boundary whilst its Northern border runs well below the polar circle - in contrast to its European range.

ECOLOGY AND ACTIVITY PATTERN.

Although the adder has definite preference for certain areas, it is encountered in a variety of habitats, from low-lying places to high mountainous areas. In the Alps it has been recorded at the 9,150 feet level, whilst in France sightings are recorded at 4,650 feet.

The biotope is fairly well known especially as far as The Netherlands are concerned. The adder is most common on the dry to wetish moors with peat areas and near natural dams, especially those with straw - heaps in the vicinity. The second important area-type is young oak growth used in hedge-type fencing between paddocks. N. Wijngaarden (1959) and V. d. Bund (1904) note the following sightings: -

Wettish Moorland	35 X	Other New Growth	4 X
Dry Moorland	23 X	Fir-tree Forests	2 X
Peat Areas	12 X	Gardens	2 X
Forest Fringes	9 X	Wettish grass	
		paddock	1 X
Young Oak Growth	5 X	Barracks Area	1 X
Roads	5 X		

I have myself sighted the adder on a track leading through young oak growth. Experiments have shown that adders are territorial and travel only short distances over fairly long periods of time. Marked adders were found within some hundreds of yards from the original catching area even a few years later.

Most adders were observed in warm, sunny weather especially on 'muggy' days. In summer most observations are made before noon, while in the colder periods - spring and autumn - sightings can be expected at any time of the day. On exceptionally hot days, sightings are unlikely after 9 a.m. Sightings after 4 p.m. are of those animals who have returned to their resting place and have not as it were turned - in yet.

In The Netherlands most sightings are made during the months, May to September, i.e. the warmest months. In Southern - Europe the period is much longer and in the colder Northern Europe much shorter. The temperature in The Netherlands during this period varies from 64 to 77 degrees. As the animals prefer sheltered, sunny spots, the temperature there is obviously higher. The preference temperature is approximately 90 degrees.

Hibernation commences usually around mid - October and lasts until early March. Often many individual snakes will use the same retreat at the onset of winter, in burrows, under tree-roots and in hollow logs. Although it is said that the adder shares his hibernaculum with other reptiles and amphibians (e.g. toad), this has not been extensively recorded. The number of hibernating animals per hibernaculum are not conclusive. v. Wijngaarden (1959) state that in The Netherlands only solitary hibernating animals were found. Frommhold (1969) gives details of two finds, 9 and 13, and Wermuth (1957) maintains that a hibernaculum consisting of 300 adders was found. Elsewhere alleged finds of more than 300 animals are recorded, in all sizes and colour variations. How the animals find their way back to each communal hibernating place is not clear. Possibly the scent of past years is still discernable, so that the animals by using their well developed sense of smell, find the same place again. In areas subject to severe winters the hibernacula are found at a depth of more than 3 feet. In The Netherlands, where the winters are moderate, these are found at a depth of 12 to 15 inches.

MORPHOLOGICAL DETAILS.

Adders have a short stout body, a broad head and a short tail.

The head is flat, and contrary to many other types of adders, not triangular, but more arrow shaped. The head is not broader than the body. The pupil forms a vertical split, the iris being tan or red, in males the colour is somewhat brighter than in females. Males have a narrower body and shorter tail than females. The total body length varies from 19 to 25 inches. In mountainous areas specimens are somewhat smaller while in Eastern-Europe the animals are often longer. The difference in the sexes is noteworthy as males are much shorter than females. The longest specimen in the Munchen Zoological Museum is 33 inches, Smith (1954) states that the maxium recorded length in the U.K. for males is 23 inches and for females 31 inches.

Pielowski (1962) records for Poland a female with a body length of 35 inches and Mertens (1947) notes an exceptional specimen (female) measuring 37 inches. In the Netherlands the length varies from 2 feet - 34 inches. (Yseling and Scheygrond, 1962) whilst de Witte (1948) records lengths of 27 inches (male) and 28 inches - 3 feet (female) for Belgium.

Colours and patterns are very variable in adders: the base colour is mainly grey, cream or brownish. Males are grayish-yellow, yellowy-brown, pale gray, silvergray, cream, dark gray or olive green. Melanotic forms with pale markings are also found regularly. In females the dorsal side is most often reddish, varying from light red, through rusty-red to dark-brownish red or even black. The markings in males are mainly black and in females red or brown, usually not as clear. However specimens without any markings at all do occur and many other colour combinations are possible.

It is therefore virtually impossible to give a precise colour definition of the adder. Adders usually have a dark zig-zag line across the length of the back with dark spots on the sides. On top of the head a figure X or V is often visible formed by dark bands, which is one of the obvious indentification marks.

The dorsal scales are heavily keeled set in 21 rows (sometimes in 19 or 23 rows). The edge of the eyes are separated by a single row of suboculars from the supralabials; the supralabials number 8-9. The number of ventrals varies from 132-158, and the subcaudals are 24-46 paired.

TO BE CONCLUDED IN THE NEXT ISSUE.

REPORT ON FIELD TRIP TO MT. WHITE.

18th JULY 1971.

10.30 a.m. and Olsen's Garage at Mt. White had never seen such activity as veterans and new comers alike assembled for the trip. Only one thing was missing - the intrepid trip leader. By majority vote he was abandoned and the expedition, comprising 9 members, 3 visitors, 3 wives and 8 children, set out.

The dirt road quickly turned into a fire trail and, as Brian Lazell had the only four wheel drive tankmobile in the expedition, it was decided to set up base camp at the first flat area. The women and children were left to guard the camp and the expeditionary force set out in two groups, the first of 11 and the second of 1.

Our official scribe, scale counter and recorder of all things noteworthy - Richard Wells was determined that the proceedings should be fully documented and photographed - so he commenced by taking "mug" shots of the members. It didn't take long for the first observations to come in. Coppertails and Lesueur's geckoes were abundant.

The day grew hotter and the rocks got heavier but interest was revived when two red-naped snakes were discovered, of course the essential data was noted, photographs taken and the group proceeded on. Meanwhile the other group of 1 was asleep in the sun away from the noise and activity.

Many more rocks were lifted (and carefully put back) with the coppertails and geckoes still proving to be numerous.

At this stage several members remarked on the absence of the yellow-faced whip snake normally quite common in this type of country. Almost immediately one was found. In the cause of Science Gerry Swan allowed himself to be bitten on the finger, so that the symptoms could be carefully noted. However the Scribe had a severe case of uncontrollable hysteria which prevented a proper evaluation of more extreme symptoms such as paralysis of the tongue and twitching of the big toes.

After several hours the party returned to base camp, devoured all food in sight and dispersed.

This was the first field trip held by the Society for some time and while not greatly productive from the herpetological view it was a pleasant days outing which had its lighter moments and gave the younger members experience in the field. The Society also had the opportunity to evaluate the interest of members in field trips and their behaviour. The possibility of further trips can now be considered.

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ADDITIONS TO THE LIBRARY.

Reptiles of Australia	-	Eric Worrell	
Australian Lizards	-	H. R. Bustard	
Snakes, The Keeper & the Kept.	-	C. Kauffeld	
The Snakes of Brisbane.	-	J. Covacevich (2 Copies)	
The Drunken Forest	-	Gerald Durrell	} Donated by N. Leech.
Two in the Bush	-	Gerald Durrell	
The Bafut Beagles	-	Gerald Durrell	

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D O N ' T F O R G E T .

VISIT THE WILDLIFE SHOW AT SYDNEY LOWER TOWN HALL.

AUGUST 17th - AUGUST 21st.

open 10 a.m. - 10 p.m. DAILY.

ADMISSION.

40 cents ADULTS.

20 cents CHILDREN.

HOUSING

BY G. MANNING.

PART 2.

In the May issue I discussed the pit as an enclosure for reptiles. We can now look further and examine the requirements for those reptiles which require cages. I don't suggest that there is only one way to build a cage, however there are certain requirements that have to be met and that is that. By personal experience I have found that three sizes are desirable. One for raising juveniles, one for most other snakes and one for tree climbers of larger size such as diamonds. One or two larger ones may be needed if you intend keeping Scrubs or very large carpets although the apparent inability of most people to provide continuous suitable food makes this a hazardous undertaking. The sizes of cages I have been using were arrived at after much experiment and talking to successful keepers.

JUVENILE CAGE.

My size is 14 inches long by 8 inches by 8 inches outside measurements. It has a removeable glass front for cleaning purposes and is top opening for ease of handling small animals. I find that the above size allows a suitable size water dish plus suitable cover and still has ample room for the animal. It is also in proportion visually.

NORMAL SIZE.

This cage is made so that the glass front opens either way, this is very convenient for daily servicing. It is also top opening for handling venomous species. The size is 2 feet by 1 foot by 1 foot. This has proved ample for such animals as browns, tigers etc. Again there is room for an ample water dish and cover. This size allows the full use of standard size sheets of ply, so is very economical to use for the majority of cages.

LARGE SIZE.

I have found that 30 inches by 16 inches by 16 inches is a convenient size. It is still portable for the average person and can be heated easily. A sliding glass front is again used, but two pieces instead of the one used in the previous size. Top opening is again provided.

JUMBO SIZE.

Not much can be offered here as the amount of room available will indicate size. It is pointed out however that size for the sake of size serves no useful purpose. In fact there is evidence to the effect that it may even be detrimental. It also makes heating and cleaning more difficult.

Now some points common to all cages. Ventilation is provided along the back. This gives ample air movement without drought. It also lets in light which makes for easier viewing. Also it tends to keep the animal from rubbing it's snout because there is generally a wall there and it doesn't look a good escape route to the animal. The gap is about 2 inches wide and extends the length of the cage. Either insect wire or fine woven wire is used. This method is good for heated cages as the air rising doesn't escape too easily.

The lids are hinged, and suitcase or cutlery box catches are used to secure them.

Glass can be placed in the excellent plastic track now available.

The inside is painted with a top quality paint such as Estapol Gloss. A light shade should be used to keep the cage light and therefore aid visibility. A coating of floor wax helps in the removal of faeces. Pine needles on the floor assist in the gathering of faeces for removal. They also have a pleasant smell. A hiding place must also be provided and a large water dish.

The above don't pretend to be the last word, but, they have been successful, every aspect has a reason and was carefully, thought out. If you change it make sure you have a valid reason. I'm not saying you must copy mine to the letter of course but you should have a reason other than cost or laziness if a major difference is contemplated.

At a later date I will discuss heating in full. This will include method and theory of reptile heating or more correctly reptile temperature requirements, a subject given to much misunderstanding.

NOTES ON BREEDING AND GROWTH RATE OF MORELIA SPILOTES SPILOTES.

BY M. HAY.

Female specimen collected at Gosford, N.S.W. March 1960, it mated with a Male Spilotes Variegata which was collected at Coffs Harbour in January 1962.

The female measured 6foot 3inches when caught, in 1964 it had reached 7 feet in length. Did not grown any longer after that but became more bulkier. It died on 29th August 1970.

FOOD. Mice, rats, rabbits, pigeons, sparrows, starling, ducklings, chickens. Preferred rats the most.

REPRODUCTION.

Deposited 27 eggs in heat box sometime between 2nd - 11th January, 1966. The female was coiled up around the eggs and very savage but would not eat (had not eaten since May, 1965). Came out of box each morning and took in about an hours sun before going back to the eggs .

No artificial heat used. Occasionally sprayed eggs with water to keep moist.

On 10th March, 20 young hatched out averaging 14-15 inches in length.

All the young are replicas of Variegata - nothing like Spilotes. First sloughed 7th and 8th April.

Fed them on small mice right from birth - have kept two specimens. These are the growth rates.

<u>Dark Specimen</u>		<u>Light Specimen</u>	
April 1967	24 inches	April 1967	21½ inches
" 1968	30 inches	" 1968	31 inches
" 1969	36½ inches	" 1969	40 inches
March 1970	47 inches	March 1970	51 inches
January 1971	54 inches	January 1971	59 inches

From about 18 months old they gradually changed in colour. Becoming more like Spilotes in colour with Variegata pattern .

THE ORIGIN OF REPTILES.

BY
DOUG ADAMS.

The story of reptile evolution goes back so far, that it is beyond our minds to comprehend the lengths of time involved. We must go back 300 million years (one-twentieth the age of the Earth) to the Devonian; a period characterised by profound climatical and geographical changes. Continents were becoming drier and hotter. Some land masses were turning into deserts. Marine waters were drying up. Bays and lakes were also disappearing.

It is in the above setting that we meet the first creatures involved in our story. They are the fishes living in the slowly shrinking lakes and water courses. Not only did the reduction in size of their water environment effect them, but the warm seasons were at the same time becoming more severe. There was less and less water during the Summer months, sometimes small pools were left, sometimes pools dried up completely. When this happened many forms of fish must have perished: but types with strong, thick fins could manage to haul themselves through and over the mud and follow the receding chains of pools along the water courses or lake beds. Fish with strong fins tended to survive in these conditions. Weak finned forms living in these areas disappeared. Paradoxically, "legs" evolved not to leave the water, but to reach it. These fresh-water lobe-finned fish (crossopterygians) were abundant in the Devonian, but early became extinct. However, some of their number migrated into the seas and formed a side branch of the lobe-fins called the coelacanth. These differed from the original stock by being short bodied, rather specialised salt water forms. The latest fossil remains of coelacanth are 55 million years old.

I digress into the story of the coelacanth because it is of interest to know that in 1939 a fisherman brought one up in his net off the coast of South Africa. Zoologists received a great surprise - they may as well have found a dinosaur. A couple more of these ancient fish have been caught since, and one is preserved in the Australian Musuem Sydney. I suggest that you make a point

of locating this exhibit on your next visit.

The drying environment dictated more than the evolution of walking fins; more than this was needed to survive when lakes and rivers started to dry up completely during the summer months. When there was no water, oxygen had to be absorbed from the air. So the lobe-finned fish developed primitive lungs.

Close relatives of these lobe-fins are the lung fish (suborder Dipnoi). These creatures evolved from the former and were alive at the same time. Although they are not of the direct line of ascent to the reptiles as are the lobe-fins, they are however, alive today, and give us a glimpse of how they must have lived in those far off days.

There are three forms of lung fish alive today, one of which is found in each Southern continent. One (*Epiceratodus*) is found in rivers in the interior of Queensland Australia, a second (*Protopterus*) in the upper Nile Basin of Africa, and a third (*Lepidosiren*) in the swampy Gran Chace of South America. The regions involved are subject to seasonal drought. Lungs are indeed necessary for survival. The ability to burrow into the mud to pass the season of drought has been observed in the African and American forms. This is termed aestivation, and corresponds to the hibernation of many animals in cold climates.

As the Devonian progressed, only those fish with the toughest fins and the most efficient lungs could survive on the parching land surface and reproduce in the scattered pools. Selection of such forms gave rise to the next creatures involved in the ascent to the reptiles, and eventually all other higher animals. We now speak of the amphibians. Immediately we hear the word amphibian a picture of a frog springs to our mind. But the ancient amphibia (*Labyrinthodonts*) looked not at all like frogs which are modern highly specialized types far departed from the first land forms. The first amphibians were, in essence, only lobe-finned fish in which limbs capable of progression on land had been more fully developed. Their bodies, consequently were covered by scales - a contrast to the modern amphibian. As I inferred, the most striking contrast between the early amphibians and their fish ancestors is seen in the limbs. They already showed the pattern of the bony

structures seen in land animals in general. Thus amphibians developed two pairs of limbs in place of fins. Another difference lies in the lungs and nostrils which open into the mouth cavity and have valves which exclude water (in contrast to the gills of fish, although gills are present in the larvae of amphibians).

The amphibians evolved during the later Devonian, and by the end of this period had secured such a grip on the land that the succeeding period, the Carboniferous, may be called the era of amphibian dominance. From fossils, hundreds of ancient amphibians are known. They were variable in shape and size, some measuring two feet in length, others being as large as crocodiles.

Early plants and insects had also been establishing themselves on the land during these times, and these provided a source of food for the amphibians. No doubt the larger species also added their smaller cousins to their diet.

The amphibians ruled the land for a considerable time; the entire Carboniferous, plus connecting portions of the preceding and following periods - a total of about 90 or 100 million years. After this great adaptive radiation they fell into the background. The ancient forms are extinct. Today's amphibians are sidelines. They comprise frogs and toads, newts, and salamanders, and caecilians (rare limbless burrowing forms). In Australia we are not familiar with all of these forms, having only frogs and the introduced cane toad as representatives.

The amphibians are a defeated group. Though they started the task, they could not complete the conquest of the land. Only by their descendants, the reptiles, was the land truly won. This new group had too many advantages, the amphibians could not compete, and were ousted from their position of dominance.

The reasons for amphibian failure and reptilian success are not hard to find. We can look to our living amphibians for the answers. The most significant disadvantages we find are the chains by which they are bound to the water. In the water they are born. To reproduce it is to this element they must return.

Also looking at the skin of a living amphibian we find it to be

continuously moist. Drying out means death. As a result they must live in a moist habitat in or near water. Clearly, reptiles, having dry skins, are able to utilize a wider ranging food supply, not to mention the advantage they have if the water disappears completely during the dry season.

The task of breaking the ties with the water is not an easy one. Some living amphibians have, in effect, given up the struggle, and have resigned themselves to a permanent aquatic life. An interesting type is the axolotl from ponds and lakes in Mexico. Under normal conditions this salamander is a permanently water-dwelling gill-breather. But we can prove that this evolution reversed by feeding it thyroid extract, whereupon the axolotl loses its gills, develops its lungs, and comes on land to live.

Returning to the discussion of reproduction we now find the most important reason for reptile superiority over the amphibians. That is, the reptiles can lay their eggs on land. Their reproduction is not governed by the presence of water as in their amphibian ancestors. Now the dry climate is no disadvantage. The amphibians therefore lose in the struggle for survival.

Even the presence of an egg shell provides an advantage for the reptile. Amphibian eggs remain terribly unprotected, being enclosed in shells, but in a mass of soft jelly.

The reptile egg is laid in sand or earth. The shell keeps the embryo from desiccation. The yoke provides food, the "white" provides water.

We have, in the reptile, an animal form no longer dependent on moisture in its immediate surroundings nor upon stretches of water in which to deposit its young. In contrast, the amphibia is dependent on just these things. It was inevitable that mutations giving rise to hard skin and shelled eggs would have enabled their owners to press farther into the land masses, evolving into new species and ousting the amphibia with their new advantages.

To be continued next issue.

NEW MEMBERS

- M. Leahey 4 Craig Ave , Smithfield. 2164 (Interests - Pythons Large Skinks, Small Monitors)
- T. De Govrik 23 Crosby Cres , Fairfield. 2165 (Interests - Pythons Tree Snakes Monitors Lizards, Tortoises)
- K. De Govrik 23 Crosby Cres , Fairfield. 2165 (Interests - Pythons Tree Snakes Monitors)
- M. Wills 9 Platform Street, Lidcombe. 2141 (Interests - Reptiles in the natural state and in captivity)
- P. Harlow 30 Station St., Naremburn 2065 (Interests - Pythons, Water Dragons Cunningham Skinks, Blue Tongues)
- D. Baume 179 Plateau Rd., Bilgola Plateau 2107 (Interests - Lizards)
- P. Weigall Timbertop C.G.S. Mansfield 3792 (Interests - Lizards and Snakes)
- P. Brown 99 Wimborne Ave , Mt. Eliza. 3930 (Interests - Studying snakes in captivity)

AGENDA SEPTEMBER - DECEMBER, 1971

- September 16th: A discussion on the Bearded Dragon (*Amphibolurus barbatus*).
- October 21st: To be announced later.
- November 18th: A discussion on monitors - leader Noel Leech.
- December 16th: Social Function.

We have had a request from a herpetologist in South Australia for an Eastern Water Dragon. If any member can oblige please contact Barrie Lowe for details..

SNAKES AND LADDERS

An overseas member, Mr A.J. Zwijnenberg would like to hear from members who can give any information on the biology, parasitology, embryology, morphology, ecology and systematics of Australian herpetofauna. He will correspond in English, German or Dutch. He is willing to give information on European herpetofauna.

Address: Dr. Wiardi Beckmansingel 337,
Vlaardingen,
HOLLAND.

Don't forget when feeding juvenile tortoises that they, like all animals, need a balanced diet. They have colossal calcium needs otherwise malformation and eventual death will follow. It may take years at times but in the end it is the same - death - which could have been avoided.

Australian Reptile Park are at present holding a display of reptiles and Amphibians at Myers Dept. Store, Penrith. The display was organised by Jack Green with Greg Miles in attendance. Well worth a visit.

Mrs Barbara Purse of Taronga Park Zoo tells us that the zoo has acquired two Egyptian Cobras, also on exhibition for the first time are two Fiji Boas which belong to the unique group of boas found in the Pacific region. Be sure to see them.

From our Canberra correspondent Geoff Manning comes the following observation. "While collecting frogs under large rocks we found a number of dead ones. There were also live frogs under these rocks. Under one was found a Goulds snake plus 6 live and 1 dead frog. Dead animals are not often encountered in the wild and these gave the appearance of having been frozen. We have had an unusually dry spell with very low temperatures.

Geoff Manning also sends this message for fruit eaters: "If at first you don't suck seed, suck until you do suck seed". His Atherton Carpet Python has now commenced eating after a twelve month fast.

THE AUSTRALIAN HERPETOLOGICAL SOCIETY

This Society was formed to enable people interested in reptiles and herpetology to meet regularly together.

The aims of the Society are:-

- (1) To collect and exchange information on all aspects of Australian reptiles and amphibians.
- (2) To encourage the study of reptiles and amphibians - both in their natural state and in captivity.
- (3) To promote a sane and reasonable attitude to reptiles and amphibians among the general public.
- (4) To organise field work in all parts of Australia and to render all possible assistance to members on collecting trips away from their home territory.

